

# A comparison of the approach to taxonomic botany by T. F. Cheeseman and L. Cockayne

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## Abstract

Cheeseman (1846–1923) and Cockayne (1855–1934) were New Zealand's most notable botanists though dissimilar in their botanical interests, outlook, and philosophy. Cheeseman's contributions to taxonomy were based on traditional 19th and early 20th century plant taxonomy applied with skill and dedication and emphasized the herbarium. Cockayne's interests in botany included taxonomy but embraced the developing fields of ecology and evolution. In later years his discovery of widespread hybridization in the New Zealand flora had a major impact on his views on taxonomy.

In published statements Cockayne, somewhat irrationally, ridiculed traditional taxonomy with its emphasis on herbaria. However, he clearly understood the importance of herbaria as shown by his autobiographical manuscript notes and well prepared herbarium specimens.

The studies of Cockayne and Cheeseman were complementary. Cockayne's field observations were monitored and authenticated by Cheeseman; Cockayne provided Cheeseman with important field observations for his *Manual* as well as personal encouragement for his work.

Leonard Cockayne (1855–1934) and Thomas Cheeseman (1846–1923) are New Zealand's most notable botanists. They are both clearly associated with New Zealand and could be considered dinkum kiwis though they were born in England — Cockayne near Sheffield and Cheeseman in Hull. They differed in their background, research interests, and personality. Cockayne was 26 when he arrived in New Zealand via Australia whereas Cheeseman was a child of six and was educated in New Zealand.

These two great botanists rarely met, the first occasion probably in 1904 and although close collaborators they never published a joint paper. However, Cockayne did contribute to Cheeseman's *Manual* including an item on hybridism in *Nothofagus* (Cheeseman 1925, p. 373).

The best evidence for a close rapport between Cockayne and Cheeseman come from their 62 letters between 1898 and 1922 which are retained at the Auckland Institute and Museum Library (file C52).

Considering Cheeseman's important status in New Zealand botany and his honoured place as a founder of the Auckland Institute and Museum, it is regrettable that a full account of his life and work has not been published. This paper presents a discussion on the approach of Cheeseman and Cockayne to taxonomic botany with the former representing the late 19th and early 20th century viewpoint and the latter an advocate of new concepts in taxonomy.

## A comparison of the publications of Cheeseman and Cockayne

The publications of Cheeseman (Cheeseman 1925, pp. xli–xliv) and Cockayne (Thomson 1982) reflect their different contributions to science. There are striking

quantitative and qualitative differences between the two. Whereas Cockayne's publications were virtually restricted to botany, Cheeseman published on both plants and animals and some ethnology as befitting a museum curator. However, within the field of botany Cheeseman's interests were much more restricted than Cockayne's. A large portion of his publications dealt with taxonomy and plant distribution. Much of Cockayne's published work was related to ecology, plant distribution and vegetation surveys (Thomson 1983a) with a smaller proportion of taxonomic work. Cockayne published on a much greater range of topics within botany than Cheeseman, and in addition was more international in his approach and published in 16 overseas journals (Thomson 1983a), whereas virtually all Cheeseman's publications were in *Trans. & Proc. New Zealand Institute*.

## Aspects of the personalities of Cockayne and Cheeseman

Evidence from many sources indicates that Cockayne and Cheeseman had quite different personalities. The published record, letters and reminiscences from friends and colleagues indicate that Cockayne had strong views, perhaps sometimes tending to the unreasonable on all manner of subjects. He seemed to delight in giving his opinion on his associates. In fact A. W. Hill, in the diary of his visit to New Zealand, commented, 'His [Cockayne's] chief weakness is his tendency to belittle the work of other N.Z. botanists, not directly working under his wing — such as Oliver [W. R. B. Oliver, 1883–1957] for instance — his intolerance somewhat unfortunate as it is coupled with some vanity as to what he has done himself' (Hill 1928, p. 283; (C) RBG Kew). Cockayne's apparently abra-



sive personality did not truly reflect his sensitive and generous character though the abrasive side was often more evident (Wall 1965).

In addition to his often boisterous attitude coupled with downright rudeness on occasion, Cockayne also had a great ability to pamper and this characteristic is shown in his relationship with Cheeseman.

Cheeseman was in many ways opposite in personality to Cockayne and I can best quote from Dr W. R. B. Oliver's undated and unpublished biography of Cheeseman:

Those who new Cheeseman personally will not readily forget his pleasant and amiable manner, his courtesy, his readiness to give his time to their enquiries and his generosity in giving the best of his wonderful fund of knowledge to help those who applied to him. He was a true servant of the people always ready to help those in search of knowledge. In spite of the great breadth of his learning he was modest and unassuming and worked unselfishly for the benefit not only of Auckland, but, through his writings for all New Zealand.

Professor A. P. W. Thomas (1857–1937) is cited by Oliver as commenting that 'Quiet and unassuming in manner, he received visitors with kindly courtesy, and seemed to take a delight in satisfying the frequent appeals for information on scientific subjects'. Oliver further comments, 'In spite of an exceedingly busy life Cheeseman spared time for friendships that were treasured by many... Always considerate of everyone whatever his position in life, Cheeseman was much respected by those whom he employed... Cheeseman seldom said a word of disparagement about anyone even though his own work was affected.'

#### Co-operation between Cockayne and Cheeseman

The letters from Cockayne to Cheeseman clearly show that the botanical studies of these two New Zealand botanists were complementary and that they co-operated very closely. Cockayne forwarded specimens and data on plant distribution which added precision to Cheeseman's taxonomic and distribution data, etc. Cheeseman (1906) acknowledged Cockayne's assistance in the introduction to his *Manual*. Cheeseman monitored specimens collected by Cockayne during his surveys and made numerous identifications for him.

It was Cockayne who had established the tenor of this close co-operation long before he was a recognized botanical leader in New Zealand. In his first letter to Cheeseman on 26 August 1898 he sent 22 lantern-slides illustrating New Zealand vegetation and offered to help Cheeseman 'all in my power' with the preparation of the *Manual* (Cheeseman 1906). Cockayne, in his letter of 14 May 1900, clearly states he is not enamoured of describing plants but generously offers his plants to Cheeseman for publication, 'Of course you can publish any of my plants, if they are new and at any time. I am not at all anxious to publish new species myself, nor am I at all wedded to any of the names I have provisionally given them only it is useful to have something to call them by'. In the next 22 years until Cheeseman's death in 1923 Cockayne upheld his promise to assist. As important as the co-operation in botanical matters was the encouragement and sustenance Cockayne provided to help Cheeseman complete the *Manual*. In my view, without Cockayne's en-

couragement at critical times, the *Manual* may have languished; there were times when the pressure of administrative chores seemed to be burdensome to Cheeseman (Cheeseman's letters of 19 February 1922 and 12 July 1922). Thus we are indebted to Cockayne not only for providing botanical knowledge to Cheeseman but also for nurturing Cheeseman's enthusiasm for his botany. In this way Cockayne showed himself to be a leading motivator in New Zealand science. He called it imparting the holy fire of enthusiasm. In the case of Cheeseman I suspect Cockayne, with his references to an F.R.S. for Cheeseman (Cockayne's letters of 6 March 1921 and 29 March 1922), would have helped give Cheeseman a fillip when his life was coming to a close. It was surprising that Cheeseman was not proposed earlier for an F.R.S. and it was an honour that did escape him (Cockayne 1923).

Cheeseman reciprocated Cockayne's encouragement and this no doubt sustained Cockayne in his own labours with *The vegetation of New Zealand* (Cockayne 1921) though perhaps Cockayne may have been more self-motivated.

The co-operation between the two was maintained despite Cockayne's unabated campaign against what he saw as the shortcomings of traditional taxonomy (see below). This did not seem to interfere with their co-operation though Cockayne's comments in publications must have taxed Cheeseman's good nature. However, some, though not all, of Cockayne's most strident and direct criticism of the current taxonomic practices came after Cheeseman's death in 1923. Cockayne's criticism became more evident in 1921 after his discovery of polymorphism suggesting hybridism in *Nothofagus* (e.g. Cockayne & Atkinson 1926).

Others have commented on the relationship between Cockayne and Cheeseman, including E. Phillips Turner (1865–1937) a noted early New Zealand botanist, forester and conservationist. He suggested in a letter of 5 February 1936 to J. C. Andersen (1873–1962) that Cockayne and Cheeseman were rivals (Thomson 1988). This assessment I believe was mischievous and misleading and failed to recognize the close co-operation between the two. Phillips Turner did seem rather disgruntled at the time he wrote the letter.

Although Cheeseman was relatively formal but friendly and polite in his letters to Cockayne he did on occasion give gentle but firm reprimands. One example was when Cockayne proposed the name *Cheesmania* for *Olearia insignis* to honour Cheeseman (Cockayne's letter of 29 March 1922 and Cheeseman's reply of 14 April 1922; Thomson 1979a). Cheeseman's *Pachystegia* prevailed.

#### Elements of the attitude of Cockayne and Cheeseman to plant taxonomy

Cheeseman represented what might be referred to as the traditional approach to plant taxonomy in the 19th and early 20th century. He applied this approach with skill and dedication and the herbarium played a central role.

Cockayne, on the other hand, campaigned against what he saw were the inadequacies of taxonomy based solely on the herbarium. Regarding herbaria Cockayne seemed to have a 'bee in his bonnet'. His vigorous and



sometimes florid language when discussing herbaria has been recorded in publications and in his letters (Thomson 1979b, 1980) and we can but imagine his sweeping and uncompromising language in discussions with botanists and anyone willing to listen. He seemed to link herbaria to what he referred to as 'the hoary old taxonomy'. He made this comment in annotations on a reprint of his paper with Allan *The present taxonomic status of the New Zealand species of Hebe* (Cockayne & Allan 1926): 'With the joint compliments of the authors to one another in the first attempt to drive a nail in the coffin of the hoary old taxonomy — the misladder, the vicious!'

Cockayne, early on in his correspondence with Cheeseman, proclaimed his lack of interest in herbaria. In sending specimens of *Pimelea* from his herbarium to Cheeseman on 28 July 1902 wrote, 'but remember you are to keep all such as long as they may be of service to you. Indeed I really care very little for my private herbarium and look upon it as a necessary nuisance'. Cockayne's apparent lax approach regarding the retention of herbarium specimens was in contrast to the attitude of Cheeseman and would be unacceptable today. I say apparent lax approach because despite his talk he did retain well prepared and fully labelled herbarium specimens. In his letter of 29 June 1920 to Cheeseman, Cockayne wrote, 'I fear that types of all my species etc., are not available. Some of the descriptions were drawn up from material in my garden, which, in all cases, was not turned into herbarium specimens'. Cockayne, from when he first decided to study New Zealand plants, made observations on plants in the field and in his Tarata Experimental Garden at New Brighton, near Christchurch. Although Cheeseman also made extensive field observations, especially in the north of New Zealand, as far as I know he did not use the experimental garden, and the herbarium played a central role in his botany. Cockayne, from the 1920s up to the time of his death on 8 July 1934, developed the Otari Open-Air Native Plant Museum near Wellington as the culmination of his approach to botany. It is appropriate that both Leonard and his wife Maude are buried there.

Cockayne's apparent dislike for herbaria was based on the admirable view that plants should be observed growing naturally in the field and in the experimental garden rather than observing them entirely in the dried condition in herbaria. I suppose this viewpoint is now generally accepted.

As early as 1906, in the newspaper articles which formed the basis of his classic book *New Zealand plants and their story* (Cockayne 1910), Cockayne gave his general view of herbaria: 'Previously the one object of a field botanist, no matter how well the flora of a region was known, was usually to collect specimens, dry them and store them away in a herbarium, whose dried and most unnatural contents were available for study. But such profitless work is being superseded. Plants are now being studied as living organisms' (Cockayne 1906). I have noted that this statement was not included in his book, perhaps better counsels prevailed (Thomson 1975). Later, in 1927, Cockayne and Allan, after much study and field observations especially in the light of Cockayne's discovery in 1921 of polymorphism in *Nothofagus* (Cockayne & Atkinson 1926), criticized what they called the 'artificial' or

'herbarium taxonomy' of the past and compared it with what they called the 'natural' or 'field taxonomy'. This paper included a direct criticism of the taxonomic approach of Cheeseman in the second edition of the *Manual* (Cheeseman 1925) though they were mindful of the pioneer contributions of Cheeseman, J. D. Hooker and T. Kirk. Cockayne and Allan concluded the 1927 paper with a plea, 'And would that new workers, free from the thralldom of the dangerous herbarium artificial method, would come forth'.

Despite these and similar derogatory statements about the 'herbarium taxonomy' Cockayne did understand the proper use of herbaria and I believe this is best illustrated by his own comments in his unpublished manuscript autobiography *The little boy in the English wood* (Thomson 1983a). These autobiographical notes were written just before Cockayne died. The factors which influenced Cockayne's resolve to study New Zealand plants (Thomson 1983b) are discussed in the autobiographical notes: after mentioning the importance of G. M. Thomson's book (1882) on New Zealand ferns, and the Featons' (1889) book, Cockayne writes, 'Still better he [Cockayne] became aware of the Herbarium of New Zealand plants in the Canterbury [Christchurch] Museum, each species bearing in the handwriting of Thomas Kirk its scientific name'. This is an unequivocal statement by Cockayne on the importance of herbaria.

Coupled with his views on herbaria, Cockayne also spoke often and also in florid terms on nomenclature and priority. Thus, on 5 April 1932, he wrote to Dr Lucy Cranwell, 'I have been appointed a member of the International Committee on Botanical Nomenclature — me a botanical bolshevist! Perhaps I may do something to stay the hands of those who desire priority at all costs and no matter how idiotic'. And in his *Hebe* paper (Cockayne 1929) he propounds a reasonable argument for stability in nomenclature and then for emphasis finished with a typical Cockayne flourish and thrust, 'But, for the future, should I stumble upon an ancient specific name, so far as I am concerned it will remain buried until perchance some botanical Frankenstein should rashly breathe life into the inert and harmless body'.

Cockayne, in letters to Cheeseman as early as 20 April 1902, did emphasize the problem of intermediate forms in the New Zealand flora, e.g. *Hebe*, and the problem this posed for Cheeseman's *Manual* (Cheeseman 1906). Thus, this problem was evident to Cockayne many years before his 1921 discovery of polymorphism suggesting hybridism in *Nothofagus*, a discovery which triggered his search for, and recognition of, hybrids in many genera after he developed the 'hybrid eye' or 'hybrid mania' (Cockayne & Allan 1934). Cheeseman did include in the second edition of his *Manual* Cockayne's note about *Nothofagus* hybrids (Cheeseman 1925). Perhaps Cheeseman did not fully accept Cockayne's records of hybrids. Cockayne *et al.* (1932), when discussing hybrids between *Ranunculus buechananii* and *R. lyalii* wrote: 'Two plants of the hybrid group much like one another were described by Cheeseman as species under the name *R. matthewsii*, for he had no idea of the great polymorphy of this hybrid group as now known, nor did the idea of hybridity occur to him. So great is the polymorphy that any herbarium botanist working with a few individuals



from different parts of the group might quite well decide to "create" several distinct species' (Cockayne *et al.* l.c., p. 34).

Perhaps the best summary of Cockayne's viewpoint on taxonomy and herbaria is given in his letter on 29 March 1927 to Dr J. S. Yeates (Thomson 1979b) who had been an early student of plant cytology in New Zealand. Cockayne wrote:

It is clearly appearing that so far as herbarium 'types' go, they tell nothing, for no one from a dried specimen can do more than make a guess at its taxonomic status, unless he has a great amount of carefully-collected material, each specimen, or set of such, taken from a single plant, supported by copious field-notes as to the individual status of such plants. Such material was never collected by any person sending material to Kew during the preparation of Hooker's New Zealand floras — and, for that matter, herbarium material in general is nearly always quite inadequate — so that but little can be learnt from the Kew Herbarium (or any Herbarium), except that those plants can be seen which Hooker dealt with. Generally the 'new species' of the *Handbook of the New Zealand Flora* — just as many of those described by Cheeseman and Petrie — were based on more than one specimen, which did not match one another, and the description referred not to any one plant, but was an imaginary conception based on the entire lot. Obviously, an abstraction not existing in nature can have no 'type'.

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